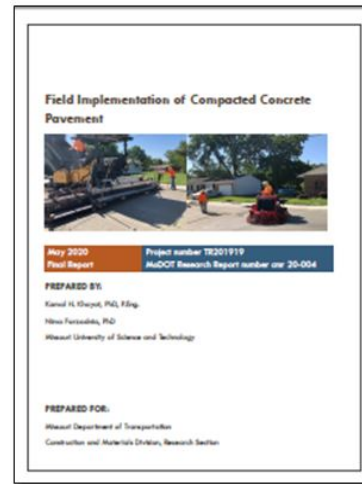


# Research Summary

## Field Implementation of Compacted Concrete Pavement

This research project was undertaken to investigate the performance of Compacted Concrete Pavement (CCP) with special design features and durability of surface texture that can reduce construction cost and secure superior surface texture. CCP is an alternative form of Roller-Compacted Concrete (RCC) and is comprised of similar mixture proportioning; however, the CCP utilizes an admixture that enables better finishing and surface texture. The major difference in construction is that CCP has a longer “fresh” or “green” period and requires little or no rolling that makes the riding surface more uniform. The use of CCP technology is supposed to enable the use of conventional slip-form paving equipment and smaller roller compaction equipment in addition to power trowels to secure smooth texture during paving.

*“CCP has a longer ‘fresh’ or ‘green’ period and requires little or no rolling that makes the riding surface more uniform.”*



During the paving operation that took place on July 23, 2019, representative CCP mixture samples were cast into four prismatic molds measuring  $6 \times 6 \times 24$  in. to determine flexural strength. Furthermore, nine cylindrical samples



Figure 1: Conclusion of surface finishing

measuring  $6 \times 12$  in. were prepared to determine compressive strength and modulus of elasticity. The Vebe test was conducted to evaluate the consistency of the CCP. Furthermore, a slab measuring  $2.5 \times 7.5$  ft. was extracted from the pavement by the City of Mexico 10 days after the paving operation. The slab was used to provide 12 saw-cut prisms and 15 core samples to determine in-situ mechanical properties, shrinkage, and durability of the concrete. The results indicate that the concrete developed adequate compressive and flexural strengths as



specified in the project. The results are indicative that prolonged curing after 91 d did not significantly affect the mechanical properties. In this project, the cast-in-field and cored/saw-cut samples exhibited comparable compressive and flexural strengths, indicating that similar compaction energy was applied during the molding of the test samples and those exerted by the paving machine.

### ***Project Information***

**PROJECT NAME:** TR201919—Field Implementation of Compacted Concrete Pavement in Mexico, MO

**PROJECT START/END DATE:** June 1, 2019–April 30, 2020

**PROJECT COST:** \$30,000

**LEAD CONTRACTOR:** Missouri University of Science & Technology

**PRINCIPAL INVESTIGATOR:** Kamal H. Khayat, PhD, P.Eng.

**REPORT NAME:** Field Implementation of Compacted Concrete Pavement

**REPORT NUMBER:** cmr 20-004

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